BTEC Assignment Brief

Qualification	Pearson BTEC International Level 3 Subsidiary Diploma in Applied Science Pearson BTEC International Level 3 Foundation Diploma in Applied Science Pearson BTEC International Level 3 Diploma in Applied Science Pearson BTEC International Level 3 Diploma in Environmental Science Pearson BTEC International Level 3 Extended Diploma in Applied Science Pearson BTEC International Level 3 Extended Diploma in Environmental Science
Unit number and title	**Unit 27: Ecosystems**
Learning aim(s)	**A:** Understand the characteristics and interactions of ecosystems **B:** Understand energy flow and biogeochemical cycling in ecosystems
Assignment title	**Characteristics and Interactions in Ecosystems**
Assessor	
Issue date	
Hand in deadline	

Vocational Scenario or Context	You are passionate about saving the planet and want to become an Ecologist. To gain knowledge and practical experience, you have signed up as a volunteer with a local conservation society. They have asked you to prepare some display and information materials for an Open Day they are holding to inform the public about Ecosystems and the interrelationships that exist within them.

Task	Scientific terminology must be correctly used to **explain**, **analyse** and **evaluate** concepts associated with the characteristics of different ecosystems and the interactions, energy flow and cycling of biogeochemicals within an ecosystem. Produce information and display materials (e.g. Leaflet, poster, blog, etc.) to: • Identify and **explain** how and why **three** ecosystems around the globe vary (e.g. aquatic, desert, forest, grassland and tundra.) Your explanation should consider the importance of abiotic factors like: o latitude o altitude o climate o soil o pH o availability of light. Abiotic and biotic factors, relationships and energy flow within an ecosystem often mean that organisms have to compete to survive. Harmful or negative pressure(s) in an ecosystem can result in evolutionary changes. • For **a named ecosystem explain** the trophic structures within it and

	how energy flows through the system. • **Explain** how and why water, carbon, nitrogen and oxygen are recycled within your chosen ecosystem. • **Explain** the relative importance of the inter-specific and intra-specific interactions between living organisms in different ecosystems. • For your **chosen ecosystem, analyse** how the interactions, competition and dependencies between the organisms can create pressure(s) which can lead to evolutionary change. Examples of evolutionary change, or the potential for this to happen, in your chosen ecosystem, must be given. Wider examples of evolutionary change can be used to supplement the evidence you are producing. • For **a named wildlife population explain** and **evaluate** population dynamics. Give reasons how and why 'boom or bust' increases/decreases in population numbers happen. You will need to obtain data, analyse patterns and provide reasoned judgements as to how this will impact on the energy budget of the population. Consider the following factors when producing your display materials: o predation, o feeding relationships o competition for food/water territory, protection, reproduction. o food chains, food webs, pyramids of numbers, energy and biomass and the role of the energy budget within the chosen ecosystem. o Recycling of water, carbon, nitrogen and oxygen o Competition for energy and resources can be crucial to survival and can lead to 'boom or bust' population dynamics and evolutionary pressure to adapt. Secondary sources must be referenced.
Checklist of evidence required	Information and display materials that: • Analyses how interactions and dependencies can contribute to evolution • Evaluates population dynamics for a named wildlife population and suggest reasons and how this may impact the energy budget. • Analyses the intra-specific relationships within a named ecosystem. • Explains the energy budget of a named ecosystem. • Explains how and why characteristics of three ecosystems vary. • Explains inter and intra-specific interactions within different ecosystems. • Explains how energy flows through a named ecosystem • Explains the recycling of water and minerals in a named ecosystem

Criteria covered by this task:	
Unit/Criteria reference	To achieve the criteria, you must show that you are able to:
AB.D1	Analyse how the dependencies and interactions of an ecosystem contribute to evolution.

AB.D2	Evaluate boom or bust population dynamics data for a named wildlife population, suggesting reasons for this pattern and impacts on the energy budget.
A.M1	Analyse the relationships of named species within an ecosystem.
B.M2	Explain the energy budget of a named ecosystem.
A.P1	Explain why and how characteristics of ecosystems vary with their distribution around the globe.
A.P2	Explain inter- and intra-specific interactions within ecosystems.
B.P3	Explain how energy flows through an ecosystem.
B.P4	Explain the recycling of water and minerals in an ecosystem.
Sources of information to support you with this Assignment	https://www.nature.com/scitable/knowledge/library/energy-economics-in-ecosystems-13254442/ http://www.ibot.cas.cz/personal/pysek/pdf/Strayer%20et%20al.-Boom%20and%20bust_EcologyLetters2017.pdf https://www.khanacademy.org/science/high-school-biology/hs-ecology/trophic-levels/a/hs-trophic-levels-review https://sciencing.com/trophic-levels-ecosystem-8205653.html https://www.siyavula.com/read/science/grade-10-lifesciences/biosphere-to-ecosystems/08-biosphere-to-ecosystems-07 https://science.jrank.org/pages/1652/Competition.html
Other assessment materials attached to this Assignment Brief	e.g. work sheets, risk assessments, case study